



PURIFIED WATER FROM URINE: A REVIEW

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ABSTRACT

Even if, urine mostly consists of water it's not suitable for consuming. But now a number of techniques were developed for converting urine into purified water. The main fields where urine is used as drinking water is international space stations water supply is one of the largest need of the long distance space travel. In order to overcome the difficulties in transportation, maintenance and economy of carrying water they adapted this technique. Different experiments were carried out by various scientists for this conversion. Without urine recycling, water will be the almost weight of spaceship. In present scenario this is a relevant topic we are discussing about.

KEYWORDS: Urine, purified water, astronauts, purification, Membrane, fertilizer, separation

INTRODUCTION

In this era also, most of the people think that urine is a waste product and it's not safe to drink. It's a liquid byproduct of metabolism in the body which is expelled through the kidney. About 1-1.6 litres of urine is excreted in 24 hours, that is about 40-60 ounces. Urine is an amber coloured as well as clear fluid. It is composed of urea, uric acid and water. The other stuff in our urine which are harmful are waste products like nitrogen, potassium, calcium, sodium and undigested alcohol. Urine analysis is carried out for diagnostic purposes. Urine is used as an alternative medicine. In some diseases urine is consumed directly without prior purification. And it's therapeutically used for various health healing and cosmetic purposes. When we drink our urine all of the waste that our kidney had worked so hard to excrete comes right back to the body. This can be overcome by purifying urine to drinking water.

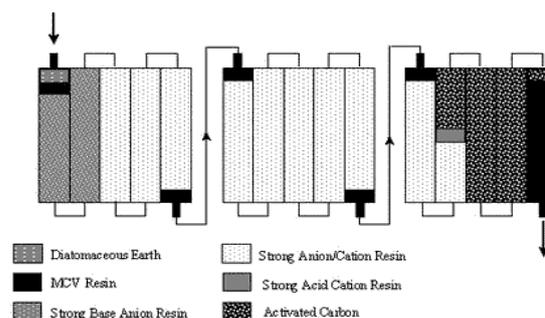
CONCEPTS OF PURIFICATION SOLAR POWERED MACHINE

Using solar power machine we can collect drinking water from urine. And this can be used to make beer. It was created by the researchers of Ghent University^[11]. It consists of a solar powered boiler and a special membrane which separates urine into water and fertilizer. This is tested in a 10 day music festival in Belgium by collecting 1000 liters of urine from the partygoers. The process of purification is called sewer to brewer. At first urine is collected in a tank and heated in a solar powered still. The nutrients get separated as it passed through the membrane, and the separated nutrients can be used as a fertilizer in agricultural field as it contains nitrogen and phosphorus.



BY OSMOSIS

Astronauts on the international space stations are purifying and drinking their urine since 2008 by the process of osmosis. In this process, there are two containers of liquid separated by a membrane. One is urine and the other is a sugary solution. Through osmosis, water from the urine flows through the membrane to the sugary solution, leaving behind the solute and urea.



H₂O PURIFIER

The concept of urine purification into drinking water by H₂O purifier was put forward by designer Leonardo Manavella. It is used in emergency situations and areas where unsafe water is using. When users urinate on the activated carbon in the purifier, the color and flavor is eliminated. The water is ready to drink on squeezing the container

WATER PURIFICATION TABLETS

Directly drinking our urine is not a safest method. The simplest method to purify urine is using water purification tablets. It contains iodine which is an antibacterial agent. some of the water purification tablets are chlorine tablet, sodium dichloroisocyanurate tablet

SCOPE

Drinking water for astronauts

Waste excretion is a main problem of space exploration. It is not convenient of ejecting it into space. On purification urine get converted into fuel and drinking water.

Fertilizers

In purification of urine by solar powered machine when water evaporates nutrients like nitrogen and organic phosphate are leaving behind which can be used as fertilizers in agricultural field.

Production of beer

The researches of Ghent University found that urine which is purified can be used to produce beer.

Production of electricity

In some methods of urine purification drinking water and electricity are obtained. This energy can be used to power the machine and in small devices like smart phones.

CONCLUSION

It is more convenient to recycle urine than eliminating it as a waste product. Urine is used as drinking water in space stations where the water cannot be carried along. Along by purification of urine to water nutrients are obtained as byproduct which can be used as fertilizer. So it paves for the agricultural needs. On removing water the remaining chemicals can generate electricity.

This topic is of great relevance in the future generation. Water scarcity may be the next reason for the next world war. So it should not be constricted among the astronauts and laboratorial researches. It should be implemented in our daily life. The water purified from urine is much safer than the water we get from earth because today whole of the water sources are polluted by industrialization. Now it is the apt time to think about more convenient, simplest and economical methods for purification of urine to water.

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